



SEQUENCE LISTING

<110> PAN Shen Quan

<120> VISUALIZATION OF INTRODUCED DNA (VOID) IN TRANSIT BY IN SITU  
HYBRIDIZATION

<130> 3671-0110PUS1

<140> US 10/510,034

<141> 2004-10-01

<150> US 60/368,524

<151> 2002-04-01

<160> 11

<170> PatentIn version 3.2

<210> 1

<211> 887

<212> PRT

<213> Arabidopsis thaliana

<400> 1

Met Ala Lys Ser Ser Ala Asp Asp Glu Glu Leu Arg Arg Ala Cys Glu  
1 5 10 15

Ala Ala Ile Glu Gly Thr Lys Gln Ser Ile Val Met Ser Ile Arg Val  
20 25 30

Ala Lys Ser Arg Gly Val Trp Gly Lys Ser Gly Lys Leu Gly Arg Gln  
35 40 45

Met Ala Lys Pro Arg Val Leu Ala Leu Ser Val Lys Ser Lys Gly Pro  
50 55 60

Arg Lys Lys Ala Phe Leu Arg Val Met Lys Tyr Ser Ser Gly Gly Val  
65 70 75 80

Leu Glu Pro Ala Lys Met Tyr Lys Leu Lys His Leu Ser Lys Val Glu  
85 90 95

Val Ile Thr Asn Asp Pro Ser Gly Cys Thr Phe Thr Leu Gly Phe Asp  
100 105 110

Asn Leu Arg Ser Gln Ser Val Ala Pro Pro Gln Trp Thr Met Arg Asn  
115 120 125

Thr Asp Asp Arg Asn Arg Leu Leu Val Cys Ile Leu Asn Ile Cys Lys  
130 135 140

Asp Val Leu Gly Arg Leu Pro Lys Val Val Gly Ile Asp Ile Val Glu  
145 150 155 160

Met Ala Leu Trp Ala Lys Asp Asn Thr Pro Val Val Thr Thr Gln Arg  
165 170 175

Ser Thr Glu Asp Gly Glu Pro Val Ala Glu Ser Val Thr Glu Ser Asp  
180 185 190

Leu Lys Val Thr Val Glu Lys Glu Leu Val Ser Gln Ala Glu Glu Glu  
195 200 205

Asp Met Glu Ala Leu Leu Gly Thr Tyr Val Met Gly Ile Gly Glu Ala  
210 215 220

Glu Ala Phe Ser Glu Arg Leu Lys Arg Glu Leu Gln Ala Leu Glu Ala  
225 230 235 240

Ala Asn Val His Ala Ile Leu Glu Ser Glu Pro Leu Val Asp Glu Val  
245 250 255

Leu Asn Gly Leu Glu Ala Ala Thr Asn Ile Val Asp Asp Met Asp Glu  
260 265 270

Trp Leu Gly Ile Phe Asn Ile Lys Leu Arg His Met Arg Glu Asp Ile  
275 280 285

Glu Ser Ile Glu Thr Arg Asn Asn Lys Leu Glu Met Gln Ser Val Asn  
290 295 300

Asn Lys Ala Leu Ile Glu Glu Leu Asp Lys Val Ile Glu Arg Leu Arg  
305 310 315 320

Val Pro Ser Glu Tyr Ala Ala Ser Leu Thr Gly Gly Ser Phe Asp Glu  
325 330 335

Ala Asp Met Leu Gln Asn Ile Glu Ala Cys Glu Trp Leu Ala Lys Ala  
340 345 350

Leu Arg Gly Leu Glu Val Pro Asn Leu Asp Pro Ile Tyr Ala Asn Met  
 355 360 365

Arg Ala Val Lys Glu Lys Arg Ala Glu Leu Glu Lys Leu Lys Ala Thr  
 370 375 380

Phe Val Arg Arg Ala Ser Glu Phe Leu Arg Asn Tyr Phe Ala Ser Leu  
 385 390 395 400

Val Asp Phe Met Val Ser Asp Lys Ser Tyr Phe Ser Gln Arg Gly Gln  
 405 410 415

Leu Lys Arg Pro Asp His Ala Asp Leu Arg Tyr Lys Cys Arg Thr Tyr  
 420 425 430

Ala Arg Leu Leu Gln His Leu Lys Gly Leu Asp Lys Asn Cys Leu Gly  
 435 440 445

Pro Leu Arg Lys Ala Tyr Cys Ser Ser Leu Asn Leu Leu Leu Arg Arg  
 450 455 460

Glu Ala Arg Glu Phe Ala Asn Glu Leu Arg Ala Ser Thr Lys Val Ser  
 465 470 475 480

Arg Asn Pro Thr Val Trp Leu Glu Gly Ser Thr Gly Ser Ser Gln Asn  
 485 490 495

Ala Asn Thr Asp Thr Ser Ala Val Ser Asp Ala Tyr Ala Lys Met Leu  
 500 505 510

Thr Ile Phe Ile Pro Leu Leu Val Asp Glu Ser Ser Phe Phe Ala His  
 515 520 525

Phe Met Cys Phe Glu Val Pro Ala Leu Ala Pro Pro Gly Gly Ala Gly  
 530 535 540

Asn Asp Lys Lys Ser Gln Ser Asn Asn Asp Asp Gly Asn Asp Asp Asp  
 545 550 555 560

Asp Leu Gly Ile Met Asp Ile Asp Glu Thr Asp Lys Lys Pro Gly Lys  
 565 570 575

Asn Ser Pro Asp Leu Thr Ala Leu Asn Glu Ser Leu Gln Asp Leu Leu

580

585

590

Asp Gly Ile Gln Glu Asp Phe Tyr Ala Val Val Asp Trp Ala Tyr Lys  
 595 600 605

Ile Asp Pro Leu Arg Cys Ile Ser Met His Gly Ile Thr Glu Arg Tyr  
 610 615 620

Leu Ser Gly Gln Lys Ala Asp Ala Ala Gly Phe Val Arg Leu Leu Leu  
 625 630 635 640

Gly Asp Leu Glu Ser Arg Val Ser Met Gln Phe Ser Arg Phe Val Asp  
 645 650 655

Glu Ala Cys His Gln Ile Glu Arg Asn Glu Arg Asn Val Arg Gln Met  
 660 665 670

Gly Val Leu Pro Tyr Ile Pro Arg Phe Ala Ala Leu Ala Thr Arg Met  
 675 680 685

Glu Gln Tyr Ile Gln Gly Gln Ser Arg Asp Leu Val Asp Gln Ala Tyr  
 690 695 700

Thr Lys Phe Val Ser Ile Met Phe Val Thr Leu Glu Lys Ile Ala Gln  
 705 710 715 720

Gln Asp Pro Lys Tyr Ala Asp Ile Leu Leu Leu Glu Asn Tyr Ala Ala  
 725 730 735

Phe Gln Asn Ser Leu Tyr Asp Leu Ala Asn Val Val Pro Thr Leu Ala  
 740 745 750

Lys Phe Tyr His Gln Ala Ser Glu Ala Tyr Glu Gln Ala Cys Thr Arg  
 755 760 765

His Ile Ser Met Ile Ile Tyr Tyr Gln Phe Glu Arg Leu Phe Gln Phe  
 770 775 780

Ala Lys Lys Ile Glu Asp Phe Met Tyr Thr Ile Thr Pro Glu Glu Ile  
 785 790 795 800

Pro Phe Gln Leu Gly Leu Ser Lys Val Glu Leu Arg Lys Met Leu Lys  
 805 810 815

Ser Ser Leu Ser Gly Val Asp Lys Ser Ile Ala Ala Met Tyr Lys Lys  
820 825 830

Leu Gln Lys Asn Leu Ala Ser Glu Glu Leu Leu Pro Ser Leu Trp Asp  
835 840 845

Lys Cys Lys Lys Glu Phe Leu Asp Lys Tyr Glu Ser Phe Val Gln Leu  
850 855 860

Val Ala Lys Val Tyr Pro Ser Glu Asn Val Pro Gly Val Thr Glu Met  
865 870 875 880

Arg Gly Leu Leu Ala Ser Met  
885

<210> 2  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic GUS-1 primer

<400> 2  
cgtcctgtag aaacc 15

<210> 3  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic GUS-2 primer

<400> 3  
acgcacagtt catag 15

<210> 4  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Synthetic BIN19-1 primer

<400> 4  
ttgctcatgt taccg 15

<210> 5  
 <211> 15  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic BIN19-2 primer

<400> 5  
 gcagttccgc aaata 15

<210> 6  
 <211> 27  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Oligo-105 primer

<400> 6  
 gaagaattcg aacttgacgc cgatacc 27

<210> 7  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Oligo-107 primer

<400> 7  
 aggctgcaga catgcgtatt ttcg 24

<210> 8  
 <211> 894  
 <212> PRT  
 <213> Homo sapiens

<400> 8

Met Thr Ala Ile Lys His Ala Leu Gln Arg Asp Ile Phe Thr Pro Asn  
 1 5 10 15

Asp Glu Arg Leu Leu Ser Ile Val Asn Val Cys Lys Ala Gly Lys Lys  
 20 25 30

Lys Lys Asn Cys Phe Leu Cys Ala Thr Val Thr Thr Glu Arg Pro Val  
 35 40 45

Gln Val Lys Val Val Lys Val Lys Lys Ser Asp Lys Gly Asp Phe Tyr  
50 55 60

Lys Arg Gln Ile Ala Trp Ala Leu Arg Asp Leu Ala Val Val Asp Ala  
65 70 75 80

Lys Asp Ala Ile Lys Glu Asn Pro Glu Phe Asp Leu His Phe Glu Lys  
85 90 95

Ile Tyr Lys Trp Val Ala Ser Ser Thr Ala Glu Lys Asn Ala Phe Ile  
100 105 110

Ser Cys Ile Trp Lys Leu Asn Gln Arg Tyr Leu Arg Lys Lys Ile Asp  
115 120 125

Phe Val Asn Val Ser Ser Gln Leu Leu Glu Glu Ser Val Pro Ser Gly  
130 135 140

Glu Asn Gln Ser Val Thr Gly Gly Asp Glu Glu Val Val Asp Glu Tyr  
145 150 155 160

Gln Glu Leu Asn Ala Arg Glu Glu Gln Asp Ile Glu Ile Met Met Glu  
165 170 175

Gly Cys Glu Tyr Ala Ile Ser Asn Ala Glu Ala Phe Ala Glu Lys Leu  
180 185 190

Ser Arg Glu Leu Gln Val Leu Asp Gly Ala Asn Ile Gln Ser Ile Met  
195 200 205

Ala Ser Glu Lys Gln Val Asn Ile Leu Met Lys Leu Leu Asp Glu Ala  
210 215 220

Leu Lys Glu Val Asp Gln Ile Glu Leu Lys Leu Ser Ser Tyr Glu Glu  
225 230 235 240

Met Leu Gln Ser Val Lys Glu Gln Met Asp Gln Ile Ser Glu Ser Asn  
245 250 255

His Leu Ile His Leu Ser Asn Thr Asn Asn Val Lys Leu Leu Ser Glu  
260 265 270

Ile Glu Phe Leu Val Asn His Met Asp Leu Ala Lys Gly His Ile Lys

275

280

285

Ala Leu Gln Glu Gly Asp Leu Ala Ser Ser Arg Gly Ile Glu Ala Cys  
 290 295 300

Thr Asn Ala Ala Asp Ala Leu Leu Gln Cys Met Asn Val Ala Leu Arg  
 305 310 315 320

Pro Gly His Asp Leu Leu Leu Ala Val Lys Gln Gln Gln Gln Arg Phe  
 325 330 335

Ser Asp Leu Arg Glu Leu Phe Ala Arg Arg Leu Ala Ser His Leu Asn  
 340 345 350

Asn Val Phe Val Gln Gln Gly His Asp Gln Ser Ser Thr Leu Ala Gln  
 355 360 365

His Ser Val Glu Leu Thr Leu Pro Asn His His Pro Phe His Arg Asp  
 370 375 380

Leu Leu Arg Tyr Ala Lys Leu Met Glu Trp Leu Lys Ser Thr Asp Tyr  
 385 390 395 400

Gly Lys Tyr Glu Gly Leu Thr Lys Asn Tyr Met Asp Tyr Leu Ser Arg  
 405 410 415

Leu Tyr Glu Arg Glu Ile Lys Asp Phe Phe Glu Val Ala Lys Ile Lys  
 420 425 430

Met Thr Gly Thr Thr Lys Glu Ser Lys Lys Phe Ala Thr Leu Pro Arg  
 435 440 445

Lys Glu Ser Ala Val Lys Gln Glu Thr Glu Ser Leu His Gly Ser Ser  
 450 455 460

Gly Lys Leu Thr Gly Ser Thr Ser Ser Leu Asn Lys Leu Ser Val Gln  
 465 470 475 480

Ser Ser Gly Asn Arg Arg Ser Gln Ser Ser Ser Leu Leu Asp Met Gly  
 485 490 495

Asn Met Ser Ala Ser Asp Leu Asp Val Ala Asp Arg Thr Lys Phe Asp  
 500 505 510



Lys Ile Phe Glu Gln Val Leu Ser Glu Leu Glu Pro Leu Cys Leu Ala  
 515 520 525

Glu Gln Asp Phe Ile Ser Lys Phe Phe Lys Leu Gln Gln His Gln Ser  
 530 535 540

Met Pro Gly Thr Met Ala Glu Ala Glu Asp Leu Asp Gly Gly Thr Leu  
 545 550 555 560

Ser Arg Gln His Asn Cys Gly Thr Pro Leu Pro Val Ser Ser Glu Lys  
 565 570 575

Asp Met Ile Arg Gln Met Met Ile Lys Ile Phe Arg Cys Ile Glu Pro  
 580 585 590

Glu Leu Asn Asn Leu Ile Ala Leu Gly Asp Lys Ile Asp Ser Phe Asn  
 595 600 605

Ser Leu Tyr Met Leu Val Lys Met Ser His His Val Trp Thr Ala Gln  
 610 615 620

Asn Val Asp Pro Ala Ser Phe Leu Ser Thr Thr Leu Gly Asn Val Leu  
 625 630 635 640

Val Thr Val Lys Arg Asn Phe Asp Lys Cys Ile Ser Asn Gln Ile Arg  
 645 650 655

Gln Met Glu Glu Val Lys Ile Ser Lys Lys Ser Lys Val Gly Ile Leu  
 660 665 670

Pro Phe Val Ala Glu Phe Glu Glu Phe Ala Gly Leu Ala Glu Ser Ile  
 675 680 685

Phe Lys Asn Ala Glu Arg Arg Gly Asp Leu Asp Lys Ala Tyr Thr Lys  
 690 695 700

Leu Ile Arg Gly Val Phe Val Asn Val Glu Lys Val Ala Asn Glu Ser  
 705 710 715 720

Gln Lys Thr Pro Arg Asp Val Val Met Met Glu Asn Phe His His Ile  
 725 730 735

Phe Ala Thr Leu Ser Arg Leu Lys Ile Ser Cys Leu Glu Ala Glu Lys  
740 745 750

Lys Glu Ala Lys Gln Lys Tyr Thr Asp His Leu Gln Ser Tyr Val Ile  
755 760 765

Tyr Ser Leu Gly Gln Pro Leu Glu Lys Leu Asn His Phe Phe Glu Gly  
770 775 780

Val Glu Ala Arg Val Ala Gln Gly Ile Arg Glu Glu Glu Val Ser Tyr  
785 790 795 800

Gln Leu Ala Phe Asn Lys Gln Glu Leu Arg Lys Val Ile Lys Glu Tyr  
805 810 815

Pro Gly Lys Glu Val Lys Lys Gly Leu Asp Asn Leu Tyr Lys Lys Val  
820 825 830

Asp Lys His Leu Cys Glu Glu Glu Asn Leu Leu Gln Val Val Trp His  
835 840 845

Ser Met Gln Asp Glu Phe Ile Arg Gln Tyr Lys His Phe Glu Gly Leu  
850 855 860

Ile Ala Arg Cys Tyr Pro Gly Ser Gly Val Thr Met Glu Phe Thr Ile  
865 870 875 880

Gln Asp Ile Leu Asp Tyr Cys Ser Ser Ile Ala Gln Ser His  
885 890

<210> 9  
<211> 571  
<212> PRT  
<213> Rattus norvegicus

<400> 9

Met Met Pro Val Ala Ser Ser Leu Ile Lys Met Pro Gly Leu Phe His  
1 5 10 15

Pro Val Ile Arg Pro Trp Glu Ile Pro Lys Gly Pro Glu Ile Arg Asn  
20 25 30

Thr Val Ile Pro Asn Thr Asp Thr Thr Ser Gly Ser Phe Asn Tyr Met  
 35 40 45

Asp Tyr Leu Ser Arg Leu Tyr Glu Arg Glu Ile Lys Asp Phe Phe Glu  
 50 55 60

Val Ala Lys Met Lys Met Thr Gly Thr Thr Lys Glu Ser Lys Lys Phe  
 65 70 75 80

Ala Thr Leu Pro Arg Lys Glu Ser Ala Val Lys Gln Glu Thr Glu Arg  
 85 90 95

Met Ser Gln Gly Arg Val Ser Cys Ser Val Ser Thr Val Leu Ser Asp  
 100 105 110

Pro His Arg Cys Pro Ile Cys Phe Gly Leu Glu Ser Thr Ile Ala Leu  
 115 120 125

Pro Ser Gly Gln Asp Pro Val Ser Leu His Gly Ser Ser Gly Lys Leu  
 130 135 140

Thr Gly Ser Thr Ser Ser Leu Asn Lys Leu Ser Val Gln Ser Ser Gly  
 145 150 155 160

Ser Arg Arg Ser Gln Ser Ser Ser Leu Leu Asp Met Gly Asn Met Ser  
 165 170 175

Ala Ser Asp Leu Asp Val Ala Asp Arg Thr Lys Phe Asp Lys Ile Phe  
 180 185 190

Glu Gln Val Leu Ser Glu Leu Glu Pro Leu Cys Leu Ala Glu Gln Asp  
 195 200 205

Phe Ile Ser Lys Phe Phe Lys Leu Gln Gln His Gln Asn Leu Ser Ala  
 210 215 220

Ser Met Ala Glu Ala Glu Asp Leu Asp Gly Gly Ser Leu Ser Arg Pro  
 225 230 235 240

Gln Ser Ser Gly Ser Leu Leu Pro Val Ser Ser Glu Lys Asp Met Ile  
 245 250 255

Arg Gln Met Met Ile Lys Ile Phe Arg Cys Ile Glu Pro Glu Leu Asn  
260 265 270

Asn Leu Ile Ala Leu Gly Asp Lys Val Asp Ser Phe Asn Ser Leu Tyr  
275 280 285

Met Leu Val Lys Met Ser His His Val Trp Thr Ala Gln Asn Val Asp  
290 295 300

Pro Ala Ser Phe Leu Ser Thr Thr Leu Gly Asn Val Leu Val Thr Val  
305 310 315 320

Lys Arg Asn Phe Asp Lys Cys Ile Ser Asn Gln Ile Arg Gln Met Glu  
325 330 335

Glu Val Lys Ile Ser Lys Lys Ser Lys Val Gly Ile Leu Pro Phe Val  
340 345 350

Ala Glu Phe Glu Glu Phe Ala Gly Leu Ala Glu Ser Ile Phe Lys Ser  
355 360 365

Ala Glu Arg Arg Gly Asp Leu Asp Lys Ala Tyr Thr Lys Leu Ile Arg  
370 375 380

Gly Val Phe Ile Asn Val Glu Lys Val Ala Asn Glu Ser Gln Lys Thr  
385 390 395 400

Pro Arg Asp Val Val Met Met Glu Asn Phe His His Ile Phe Ala Thr  
405 410 415

Leu Ser Arg Leu Lys Ile Ser Cys Leu Glu Ala Glu Lys Lys Glu Ala  
420 425 430

Lys Gln Lys Tyr Thr Asp His Leu Gln Ser Tyr Val Ile Tyr Ser Leu  
435 440 445

Gly Gln Pro Leu Glu Lys Leu Asn His Phe Phe Glu Gly Val Glu Ala  
450 455 460

Arg Val Ala Gln Gly Ile Arg Glu Glu Glu Val Ser Tyr Gln Leu Ala  
465 470 475 480

Phe Asn Lys Gln Glu Leu Arg Lys Val Ile Lys Glu Tyr Pro Gly Lys

485

490

495

Glu Val Lys Lys Gly Leu Asp Asn Leu Tyr Lys Lys Val Asp Lys His  
 500 505 510

Leu Cys Glu Glu Glu Asn Leu Leu Gln Val Val Trp His Ser Met Gln  
 515 520 525

Asp Glu Phe Ile Arg Gln Tyr Lys His Phe Glu Gly Leu Ile Ala Arg  
 530 535 540

Cys Tyr Pro Gly Ser Gly Val Thr Met Glu Phe Thr Ile Gln Asp Ile  
 545 550 555 560

Leu Asp Tyr Cys Ser Ser Ile Ala Gln Ser His  
 565 570

<210> 10  
 <211> 894  
 <212> PRT  
 <213> Mus musculus

<400> 10

Met Thr Ala Ile Lys His Ala Leu Gln Arg Asp Ile Phe Thr Pro Asn  
 1 5 10 15

Asp Glu Arg Leu Leu Ser Ile Val Asn Val Cys Lys Ala Gly Lys Lys  
 20 25 30

Lys Lys Asn Cys Phe Leu Cys Ala Thr Val Thr Thr Glu Arg Pro Val  
 35 40 45

Gln Val Lys Val Val Lys Val Lys Lys Ser Asp Lys Gly Asp Phe Tyr  
 50 55 60

Lys Arg Gln Ile Ala Trp Ala Leu Arg Asp Leu Ala Val Val Asp Ala  
 65 70 75 80

Lys Asp Ala Ile Lys Glu Asn Pro Glu Phe Asp Leu His Phe Glu Lys  
 85 90 95

Val Tyr Lys Trp Val Ala Ser Ser Thr Ala Glu Lys Asn Ala Phe Ile  
 100 105 110

Ser Cys Ile Trp Lys Leu Asn Gln Arg Tyr Leu Arg Lys Lys Ile Asp  
115 120 125

Phe Val Asn Val Ser Ser Gln Leu Leu Glu Glu Ser Val Pro Ser Gly  
130 135 140

Glu Asn Gln Ser Val Ala Gly Gly Asp Glu Glu Ala Val Asp Glu Tyr  
145 150 155 160

Gln Glu Leu Asn Ala Arg Glu Glu Gln Asp Ile Glu Ile Met Met Glu  
165 170 175

Gly Cys Glu Cys Ala Ile Ser Asn Ala Glu Ala Phe Ala Glu Lys Leu  
180 185 190

Ser Arg Glu Leu Gln Val Leu Asp Gly Ala Asn Ile Gln Ser Ile Met  
195 200 205

Ala Ser Glu Lys Gln Val Asn Thr Leu Met Gln Leu Leu Asp Glu Ala  
210 215 220

Leu Thr Glu Val Asp Gln Ile Glu Leu Lys Leu Ser Ser Tyr Glu Glu  
225 230 235 240

Met Leu Gln Ser Val Lys Glu Gln Met Asp Gln Ile Ser Glu Ser Asn  
245 250 255

His Leu Ile His Leu Ser Asn Thr Asn Asn Val Lys Leu Leu Ser Glu  
260 265 270

Ile Glu Phe Leu Val Asn His Met Asp Leu Ala Lys Gly His Ile Lys  
275 280 285

Ala Leu Gln Glu Gly Asp Leu Val Ser Ser Arg Gly Ile Glu Ala Cys  
290 295 300

Thr Asn Ala Ala Asp Ala Leu Leu Gln Cys Met Asn Val Ala Leu Arg  
305 310 315 320

Pro Gly His Asp Met Leu Leu Ala Ile Lys Gln Gln Gln Gln Arg Phe  
325 330 335

Ser Asp Leu Arg Glu His Phe Ala Arg Arg Leu Ala Ser His Leu Asn  
 340 345 350

Asn Val Phe Val Gln Gln Gly His Asp Gln Ser Ser Thr Leu Ala Gln  
 355 360 365

His Ser Val Glu Leu Thr Leu Pro Asn His His Pro Phe His Arg Asp  
 370 375 380

Leu Leu Arg Tyr Ala Lys Leu Met Glu Trp Leu Lys Ser Thr Asp Tyr  
 385 390 395 400

Gly Lys Tyr Glu Gly Leu Thr Lys Asn Tyr Met Asp Tyr Leu Ser Arg  
 405 410 415

Leu Tyr Glu Arg Glu Ile Lys Asp Phe Phe Glu Val Ala Lys Met Lys  
 420 425 430

Met Thr Gly Thr Ser Lys Glu Ser Lys Lys Phe Ala Thr Leu Pro Arg  
 435 440 445

Lys Glu Ser Ala Val Lys Gln Glu Thr Glu Ser Leu His Gly Ser Ser  
 450 455 460

Gly Lys Leu Thr Gly Ser Thr Ser Ser Leu Asn Lys Leu Ser Val Gln  
 465 470 475 480

Ser Ser Gly Ser Arg Arg Ser Gln Ser Ser Ser Leu Leu Asp Met Gly  
 485 490 495

Asn Met Ser Ala Ser Asp Leu Asp Val Ala Asp Arg Thr Lys Phe Asp  
 500 505 510

Lys Ile Phe Glu Gln Val Leu Ser Glu Leu Glu Pro Leu Cys Leu Ala  
 515 520 525

Glu Gln Asp Phe Ile Ser Lys Phe Phe Lys Leu Gln Gln His Gln Asn  
 530 535 540

Met Ser Ala Ser Met Thr Glu Ala Glu Asp Leu Asp Gly Gly Ser Leu  
 545 550 555 560

Ser Arg Gln His Ser Ser Gly Thr Leu Leu Pro Val Ser Ser Glu Lys

565

570

575

Asp Met Ile Arg Gln Met Met Ile Lys Ile Phe Arg Cys Ile Glu Pro  
 580 585 590

Glu Leu Asn Asn Leu Ile Ala Leu Gly Asp Lys Val Asp Ser Phe Asn  
 595 600 605

Ser Leu Tyr Met Leu Val Lys Met Ser His His Val Trp Thr Ala Gln  
 610 615 620

Asn Val Asp Pro Ala Ser Phe Leu Ser Thr Thr Leu Gly Asn Val Leu  
 625 630 635 640

Val Thr Val Lys Arg Asn Phe Asp Lys Cys Ile Ser Asn Gln Ile Arg  
 645 650 655

Gln Met Glu Glu Val Lys Ile Ser Lys Lys Ser Lys Val Gly Ile Leu  
 660 665 670

Pro Phe Val Ala Glu Phe Glu Glu Phe Ala Gly Leu Ala Glu Ser Ile  
 675 680 685

Phe Lys Asn Ala Glu Arg Arg Gly Asp Leu Asp Lys Ala Tyr Thr Lys  
 690 695 700

Leu Ile Arg Gly Val Phe Ile Asn Val Glu Lys Val Ala Asn Glu Ser  
 705 710 715 720

Gln Lys Thr Pro Arg Asp Val Val Met Met Glu Asn Phe His His Ile  
 725 730 735

Phe Ala Thr Leu Ser Arg Leu Lys Ile Ser Cys Leu Glu Ala Glu Lys  
 740 745 750

Lys Glu Ala Lys Gln Lys Tyr Thr Asp His Leu Gln Ser Tyr Val Ile  
 755 760 765

Tyr Ser Leu Gly Gln Pro Leu Glu Lys Leu Asn His Phe Phe Glu Gly  
 770 775 780

Val Glu Ala Arg Val Ala Gln Gly Ile Arg Glu Glu Glu Val Ser Tyr  
 785 790 795 800



Gln Leu Ala Phe Asn Lys Gln Glu Leu Arg Lys Val Ile Lys Glu Tyr  
805 810 815

Pro Gly Lys Glu Val Lys Lys Gly Leu Asp Asn Leu Tyr Lys Lys Val  
820 825 830

Asp Lys His Leu Cys Glu Glu Glu Asn Leu Leu Gln Val Val Trp His  
835 840 845

Ser Met Gln Asp Glu Phe Ile Arg Gln Tyr Lys His Phe Glu Gly Leu  
850 855 860

Ile Ala Arg Cys Tyr Pro Gly Ser Gly Val Thr Met Glu Phe Thr Ile  
865 870 875 880

Gln Asp Ile Leu Asp Tyr Cys Ser Ser Ile Ala Gln Ser His  
885 890

<210> 11  
<211> 889  
<212> PRT  
<213> Drosophila melanogaster

<400> 11

Met Leu Ser Ile Gly Ala Met Ala Asn Ile Lys His Thr Leu Gln Lys  
1 5 10 15

Glu Leu Phe Leu Ala Ser Gly Glu Arg Leu Leu Ser Val Val Thr Val  
20 25 30

Val Lys Lys Lys Asp Lys Lys Pro Cys Tyr Leu Cys Val Val Thr Thr  
35 40 45

Ala Pro Pro Val Pro Val Val Thr Leu Cys Leu Ile Lys Gln Ser Glu  
50 55 60

Gln Arg Glu Gly Glu Tyr Lys Arg Lys Arg Ser Trp Gln Leu Asp Glu  
65 70 75 80

Ile Lys Trp Val Asp Gly Arg Asn Glu Gln Phe Gln Thr His Glu Phe  
85 90 95

Asp Leu Gln Leu Glu Lys Leu Tyr Lys Trp Tyr Ala Leu Asn Pro His  
 100 105 110

Glu Arg Gln Asn Phe Leu Ala Val Leu Asn Arg Gln Ile Gln Lys Ser  
 115 120 125

Val Arg Gly Gln Arg Ala Glu Phe Arg Asn Val Pro Ala Ala Trp Leu  
 130 135 140

Ser Glu Lys Ser Pro Glu Lys Val Ala Leu Gly Arg Ala Val Gln Lys  
 145 150 155 160

Thr Gln His Met Asp Asp Glu Glu Asp Glu Glu Glu Glu Ala Gln Glu  
 165 170 175

Phe Thr Ala Leu Thr Asp Lys Glu Ala Asn Glu Leu Gly Lys Leu Phe  
 180 185 190

Ser Glu Cys Asp Phe Ala Ile Lys Asp Ala Glu Gln Phe Ile Glu Gln  
 195 200 205

Leu Ser Arg Glu Leu His Asp Leu Asp Gly Ala Asn Met Gln Ser Val  
 210 215 220

Leu Ala Ser Glu Gln Lys Val Leu Lys Met Met Glu His Ile Asp Asn  
 225 230 235 240

Ala Ile Ser Glu Ala Asp Lys Phe Glu Asn Arg Leu Asp Ser Tyr Glu  
 245 250 255

Asp Ile Leu Gly His Val Lys Glu Thr Met Glu Lys Ile Gly Gly Lys  
 260 265 270

Asn Ala Met Ile Glu Ile Ala Asn Asn Asn Asn Ile Lys Leu Met Lys  
 275 280 285

Glu Leu Asn Lys Val Ile Ser Gln Leu Asp Leu Pro His Ser Gln Gln  
 290 295 300

Gln Ala Leu Asp Glu Pro Asp Leu Lys Thr Ala Asn Gly Arg Lys Ala  
 305 310 315 320

Ala Ile Ala Ala Ala Gln Cys Leu Gln Gln Ala Met Asn Ser Asp Ile  
325 330 335

Asp Pro Ala Leu Leu Arg Leu Glu Ala Val Gln Asp Gln Arg Lys Arg  
340 345 350

Phe Glu Lys Trp Lys Gln Lys Phe Ser Ala Thr Val Ser Arg Phe Met  
355 360 365

Asn Asn Leu Phe Ile His Leu Gly Asn Glu Ile Gly Asp Met Gln Val  
370 375 380

Thr Ser Thr Glu Leu Thr Leu Pro Asn His Ser Asn Val His Arg Glu  
385 390 395 400

Leu Thr Pro Tyr Thr Glu Leu Met His Trp Thr Lys Ala Met Asp Arg  
405 410 415

Lys Thr Tyr Asp Gly Leu Met Arg Val Tyr Thr Ala Ser Leu Ser Lys  
420 425 430

Ile Tyr Asp Arg Asp Val Arg Asn Phe Phe Asn Leu Ala Lys Ile Gln  
435 440 445

Val Thr Glu Lys Leu Arg Asn Ser Arg Glu Asp Leu Asp Met Ser Thr  
450 455 460

Ser Ser Arg Lys Ser Ala Val Ser Thr Ile Pro Tyr Gly Thr Leu Gly  
465 470 475 480

Ile Asn Arg Asp Gln Trp Gly Pro Gly Val Glu Thr Ala Asp Arg Met  
485 490 495

Arg Phe Asp Ala Leu Leu Glu Lys Val Leu Ala Glu Leu Glu Pro Ile  
500 505 510

Ala Leu Gln Glu Gln Leu Phe Cys Ile Asn Phe Phe Gln Met Asp Val  
515 520 525

Ile Ser Pro Thr Thr Lys Asn Thr Gln Thr Thr Leu Glu Met Glu Lys  
530 535 540

Ala Val Asp Met Thr Gln Ser Ile Ile Ser Gly Ala Val Ser Pro Ser

|                 |                     |                 |             |     |     |     |
|-----------------|---------------------|-----------------|-------------|-----|-----|-----|
| 545             |                     | 550             |             | 555 |     | 560 |
| Gly Asp Gly Val | Pro Gln Lys Arg Ile | Asp Arg Gln Ile | Asn Glu Asp |     |     |     |
|                 | 565                 |                 | 570         |     | 575 |     |
| Val Arg Lys Leu | Met Met Gly Leu Phe | Gly Cys Leu Glu | Pro Glu Leu |     |     |     |
|                 | 580                 |                 | 585         |     | 590 |     |
| Val Ser Phe Ile | Gln Ser Phe Glu Arg | Val Asp Ser Phe | Tyr Ser Leu |     |     |     |
|                 | 595                 |                 | 600         |     | 605 |     |
| Tyr Val Phe Val | Arg Leu Thr Gln His | Val Met Ser Ala | Gln Asp Thr |     |     |     |
|                 | 610                 |                 | 615         |     | 620 |     |
| His Ser Phe Leu | Ser Met Thr Phe Ala | Ser Ala Leu Val | Gln Val Lys |     |     |     |
|                 | 625                 |                 | 630         |     | 635 |     |
| Arg Ser Phe Asp | Arg Phe Met Gln Asn | Gln Leu Leu Ser | Ile Arg Glu |     |     |     |
|                 | 645                 |                 | 650         |     | 655 |     |
| Ala Lys Leu His | Lys Arg Ser Lys Ala | Ile Leu Pro Tyr | Val Glu Asn |     |     |     |
|                 | 660                 |                 | 665         |     | 670 |     |
| Phe Glu Asn Phe | Ala Gln Thr Ala Glu | Gly Ile Phe Arg | Lys Ser Asp |     |     |     |
|                 | 675                 |                 | 680         |     | 685 |     |
| Arg Arg Thr Asp | Met Glu Lys Trp Tyr | Leu Gln Leu Val | Asn Ala Ile |     |     |     |
|                 | 690                 |                 | 695         |     | 700 |     |
| Phe Glu Gly Ile | Gln Leu His Ser Gln | Glu His Pro Lys | Thr Pro Ile |     |     |     |
|                 | 705                 |                 | 710         |     | 715 |     |
| Gln Val Val Arg | Met Glu Asn Tyr His | His Met Tyr Ala | Leu Leu Ala |     |     |     |
|                 | 725                 |                 | 730         |     | 735 |     |
| Gln Leu Lys Val | Pro Gly Leu Asp Ala | Leu Lys Lys Glu | Ala Lys Lys |     |     |     |
|                 | 740                 |                 | 745         |     | 750 |     |
| Cys Tyr Asn Asp | Ala Leu Lys Ala Tyr | Val Thr Gln Tyr | Phe Gly Arg |     |     |     |
|                 | 755                 |                 | 760         |     | 765 |     |
| Pro Leu Glu Lys | Leu Asn Gln Phe Phe | Glu Gly Val Gln | Leu Lys Val |     |     |     |
|                 | 770                 |                 | 775         |     | 780 |     |

Ala Gln Gly Val Lys Glu Thr Glu Ile Ser Tyr Gln Met Ala Phe Ser  
785 790 795 800

Lys Gln Glu Leu Arg Lys Val Ile Ala Gln Tyr Pro Ala Arg Glu Val  
805 810 815

Lys Lys Gly Leu Glu Asn Leu Tyr Lys Lys Val Glu Lys His Leu Ser  
820 825 830

Glu Glu Glu Asn Leu Leu Gln Val Val Trp His Ala Met Gln Glu Glu  
835 840 845

Phe Ile Ala Gln Tyr Asn Tyr Leu Glu Glu Arg Ile Gln Lys Cys Tyr  
850 855 860

Ala Gly Ala Met Ile Asn Leu Glu Phe Asn Ile Gln Asp Ile Leu Ala  
865 870 875 880

Phe Phe Ser Asp Ile Ala Arg Ser His  
885

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☒ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**